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Siren, Anu Kristiina; Haustein, Sonja

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Anu Siren*

The Danish National Centre for Social Research,

Herluf Trolles Gade 11, 1052 Copenhagen, Denmark

Tel.: +4533697753

E-mail: anu@sfi.dk

Sonja Haustein

Department of Transport, Technical University of Denmark,

Bygningstorvet 115, DK-2800 Kgs. Lyngby, Denmark

Tel.: +4545256519

E-mail: sonh@transport.dtu.dk

*corresponding author

ABSTRACT

This study focuses on the decision to either stop or continue driving among a cohort of Danish seniors whose driving licenses expire, for the first time, at the age of 70. Based on 1537 standardized telephone interviews with licensed drivers, we compared persons who intended to renew or not to renew their licenses. The results partly recapture the findings of earlier studies. However, in contrast to former cohorts, a much higher percentage of older drivers intended to keep their licenses. The strongest factors predicting the intention to renew were active car use, feeling safe as a driver, not being dependent on others and not having illnesses that impaired driving ability. Three of these factors were strongly correlated with gender, indicating that efforts to prevent premature driving cessation should especially focus on increasing women's confidence and experience in driving.

INTRODUCTION

For many seniors, driving is the primary mode of transport. Driving is also the safest and often the most convenient mode of travel for older persons (Organization for Economic Cooperation and Development (OECD), 2001). Thus, stopping driving can have negative consequences for personal safety and mobility, and further, for individual well-being. Previous research has shown that, after driving cessation, activities outside the home decrease (Marottoli et al., 2000; Rosenbloom, 2001), social networks become reduced (Mezuk & Rebok, 2008) and dependency on others for transport increases (Rosenbloom, 2001). Previous research has also identified a number of negative health consequences from driving cessation, including an increase in depressive symptoms (Fonda, Wallace & Herzog, 2001; Marottoli et al., 1997; Ragland, Satariano & MacLeod, 2005; Windsor, Anstey, Butterworth, Luszcz & Andrews, 2007), feelings of stress and isolation (Peel, Westmoreland & Steinberg, 2002), and decreases in physical and social functioning (Edwards et al., 2009).

Factors associated with driving cessation include older age (e.g., Anstey, Windsor, Luszcz & Andrews, 2006; Edwards et al., 2008; McNamara et al., 2013), female gender (e.g., Braitman & Williams, 2011; Chipman, Payne & McDonough, 1998; Dellinger, Sehgal, Sleet & Barrett-Connor, 2001; Gallo, Rebok & Lesikar, 1999; Hakamies-Blomqvist & Wahlström, 1998; Weeks et al., 2013), lower car use frequency already earlier in life (Rabbitt, Carmichael, Jones & Holland, 1996; Hakamies-Blomqvist & Siren, 2003), problems in health and cognitive function (e.g., Anstey et al., 2006; Ball et al., 1998; Brayne et al., 2000; Dellinger et al., 2001; Edwards et al., 2008; Persson, 1993; Rabbitt et al.; 1996; Sims, Ahmed, Sawyer & Allman, 2007; Trobe, Waller, Cook-Flannagan, Teshima & Bieliauskas, 1996), and decreased psychological well-being (Anstey et al., 2006). Male gender and active driving patterns, in turn, seem to prevent driving cessation (Hakamies-Blomqvist &

Wahlström, 1998; Hakamies-Blomqvist & Siren, 2003). Previous research has also indicated that economic factors (e.g., Burkhardt, Berger & McGavock, 1996; Hakamies-Blomqvist & Wahlström, 1998), social responsibilities, that is, driving others (Adler, Rottunda, Rasmussen & Kuslowski, 2000; Siren & Hakamies-Blomqvist, 2005), experiences of stress in traffic (Hakamies-Blomqvist & Wahlström, 1998) and low confidence in driving ability (McNamara et al., 2013) play a part in the decision to stop or continue driving.

For many people who reach old age, ceasing to drive is a decision to consider at some point in life. Earlier, driving cessation was considered as a positive behavioral pattern, implying self-reflection and good judgment (see e.g., Persson, 1993; Rabbitt et al., 1996). However, more recent understanding of the negative consequences of driving cessation, both for the older individuals themselves and for society, has caused an emerging interest in extending safe driving careers and preventing premature driving cessation (e.g., Stutts & Wilkins, 2003).

Wilkins, Stutts and Schatz (1999, p.86) define driving cessation, or marked driving reduction, as premature when a driver drives "infrequently or not at all although not restricted by medical or financial limitations". Older women especially have been suggested to be at particular risk of premature cessation (Eberhard, 1996; Hakamies-Blomqvist & Wahlström, 1998; Rimmö & Hakamies-Blomqvist, 2002; Siren, Hakamies-Blomqvist & Lindeman, 2004; Wilkins et al., 1999), but the factors propelling premature driving cessation are unclear. Wilkins et al. (1999) studied women who had prematurely stopped or reduced their driving and found that they did so mainly because they did not feel comfortable driving, they lacked confidence in their driving, or someone else was readily available to drive. Meng and Siren (2013) found older women to be more likely than men to regulate their driving due to lack of confidence, and similarly, D'Ambrosio et al. (2008) found that women had less

confidence in their own driving skills than men, even after controlling for driving experience and other background variables. This indicates that the reasons behind women's premature driving cessation are complex and that socially constructed roles and expectations play a role in explaining observed gender differences.

Structural and system-level factors may also propel premature driving cessation. In many countries, the licensing policies do not interact positively with the goal of keeping older people driving as long as possible (Langford & Koppel, 2006; Kulikov, 2011; Mitchell, 2008; Siren & Meng, 2012; Siren et al., 2013). Especially in Europe, many older drivers have been found to cease driving in connection with mandatory license renewal (Hakamies-Blomqvist & Wahlström, 1998; Mitchell, 2008). This may reflect the somewhat later automobilisation of the European societies as well as an infrastructure that to some degree supports multimodality.

Already in 1979, Martin Wachs showed that seniors are heterogeneous in their transport needs, resources and preferences, and that these also are cohort and lifestyle dependent (Wachs, 1979). In the coming years, new, large cohorts of seniors will reach the old-age milestone(s) where, in many countries, licenses need to be renewed. Will these cohorts stop driving or are they likely to be different from the previous cohorts? Will there still be a tendency for premature cessation? Many of the previous studies on driving cessation are based on data from the 1990s, thus describing the behavior and choices of older cohorts of seniors (Hakamies-Blomqvist & Wahlström, 1998; Hakamies-Blomqvist & Siren, 2003; Mitchell, 2008; Siren et al., 2004). Recent studies on travel patterns report, however, increasing travel activity, and higher licensing rates and car use among each successive cohort of seniors (e.g., Arentze, Timmermanns, Jorritsma, Kalter & Schoemakers, 2008; Hjorthol, Levin and Siren, 2010; Newbold, Scott, Spinney, Kanaroglou & Páez, 2005),

indicating that the new cohorts are more car-reliant and perhaps less likely to cease driving in old age. In line with this, a recent study on the characteristics of non-driving seniors in USA showed that the proportion of older persons not driving has significantly declined from 1993 to 2008 (Choi & Mezuk, 2013).

The present study examines the decision to either stop or continue driving among the 1939/1940 cohort of Danish seniors whose driving licenses expire for the first time at the age of 70. More specifically, we investigate the differences between those who intend to renew ("renewers") and those who intend not to renew ("non-renewers") in terms of socio-demographic characteristics, health, driving patterns and experiences in traffic, as well as the reasons they give for either renewing or giving up the license. Denmark is a rather densely populated country with an infrastructure that supports multimodality, especially in urban areas. However, the vast majority (ca. 85%) of Danes has access to a car and people tend to be car-reliant in their everyday transportation, especially outside the biggest cities. Of all daily trips, 57% are made by private car (DTU Transport, 2012).

MATERIALS AND METHODS

The procedure

Data for this study were collected by interviewing a sample of older Danish persons in November and December 2009, and the data were collected by means of standardized computer-assisted telephone interviews (CATI) carried out by Ipsos Marketing (at the time Synovate Denmark A/S).

A random sample of citizens, who turned 70 between November 2009 and February 2010 (belonging to the cohorts 1939 and 1940), was drawn from the Danish civil registration system. The target population received a letter announcing the survey. Altogether, 1792

interviews were conducted. After correcting for telephone/address errors, people who were unable to be interviewed due to language barriers or illness and people who were not contacted because the number of intended interviews had already been achieved, the overall response rate was 70% (15% refusals, 15% not reached).

Measures

The standardized interviews were based on an ad hoc questionnaire. On average, the interviews took 25 minutes to complete. In the following section, the parts of the questionnaire analyzed in the present article are described in detail.

Background information included gender, education, family status (married/living with a partner, single, widowed), personal income, and place of residence. In addition, the participants were asked if they intended to renew their drivers' licenses when turning 70.

Health and well-being. Participants were asked to rate their overall health on a four-point rating scale ("excellent," "good," "fair" and "poor"). As an objective measure of health status, the participants were presented with a list of 20 symptoms and illnesses and asked to indicate whether they suffered from these as diagnosed by a physician. This list was derived from previous studies with a similar setting and participants (e.g., Siren et al., 2004). Since only some of the illnesses and symptoms impair the ability to drive, illnesses and symptoms were further classified into three categories: illnesses impairing driving ability (cataract or glaucoma, stroke or brain infarction, dementia, and short-time unconsciousness), illnesses possibly impairing driving ability (chest pain, vertigo, heart defect, diabetes, heart infarction, Parkinson's disease, and epilepsy), and illnesses not impairing driving ability (pain in joints, high blood pressure, blood circulation problems in legs or feet, lung diseases, cancer, hyperthyroid or hypothyroid disease, anemia, and vitamin deficit). The categories were based on the work by Janke (1994).

In addition, individual well-being was measured by the CES-D depression scale (e.g., Radloff, 1977) and the Pearlin mastery scale (Pearlin & Schooler, 1978). The CES-D scale is a short self-report scale designed to measure depressive symptomatology in the general population. The Pearlin mastery scale measures the extent to which a person perceives her/himself to be in control of events and ongoing situations. Both scales showed acceptable internal consistencies (Cronbach's alpha) at both survey times (CES-D depression scale: α (2009) = .67; α (2012) = .68; Pearlin mastery scale α (2009) = .79; α (2012) =. 77).

Car use and access. Individuals were asked whether they had a driving license, their current annual mileage and that of ten years ago, their driving frequency and their access to a car (as a driver). Driving frequency was assessed with a six-point rating scale ranging from "every day" to "never."

Dependency on others was assessed by asking how dependent the participants were on other people for their transportation when leaving home (four-point scale "not at all"; "only a little"; "to some degree"; "to a high degree").

Perceived safety. Individuals were asked on a four-point rating scale (ranging from "very safe" to "very unsafe") how safe they felt as cyclists or pedestrians, as drivers of a car and as users of public transport.

Questions regarding the license renewal process. Reasons to renew the license were assessed by asking the persons who intended to renew about their level of agreement regarding six possible reasons on a five-point rating scale ("totally disagree" – "totally agree"). Similarly, those who intended not to renew their licenses were asked to rate their level of agreement with respect to eight respective statements. All individuals were further asked if they expected it to be difficult to renew the license (yes/no) and renewers were asked

how nervous they felt about being evaluated by their general practitioners using a four-point rating scale ("very nervous" – "not at all nervous").

Respondents

In this paper, the focus is on licensed drivers who either reported an intention to renew or not to renew their licenses. Those who were undecided (0.6%) were not included in the analyses. The group of respondents who were included in the analyses (n=1537) consisted of 729 women (47.4%) and 808 men (52.6%), who turned 70 within two months from the interview. Most of them had a spouse (77.9% were married or cohabitating), while 13.7% were widowed and 8.5% single. The average personal annual income was approximately 24,000 EUR. Regarding education, 26.3% had a basic school education, whereas 27% had a (medium or long-term) higher education. The sample was representative in terms of gender and percentage of widowed persons. However, the income was somewhat below average[1]), whereas the educational level of the sample was above average[2] . The lower income might be due to a high number of missing values regarding income (15.7%). It is possible that, especially, people with higher incomes refused to answer this question. The higher education status of the sample is probably due to a higher willingness to participate among people with a higher education.

Analysis

In order to test the statistical significance of differences between renewers and non-renewers, we used Pearson's χ^2 test and ANOVAs as appropriate. Further, a logistic regression analysis was calculated to predict the probability of renewing one's license by

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[1] For persons aged 70–74 average income in 2010 was 28,600 EUR.
[2] For persons aged 65–69 in 2009, 39.8% had received a basic education and 16.5% had a higher education.

multiple predictors, such as gender, car use, and health, which have been found to be significantly related to driving cessation in previous research.

RESULTS

In the following, we describe how persons who intended to renew their licenses differed in socio-demographic, health, and travel-related variables, from those who did not intend to renew their licenses. To take possible gender differences into account, results are presented for men and women separately. Thereafter, reasons for renewing or not renewing the license are considered as well as expectations regarding the renewing process. Finally, the most important factors for renewing the license are estimated in a regression analysis.

Socio-demographic and health-related differences

Renewers (n=1436) and non-renewers (n=101) differed in their socio-demographics (Table 1). First, men more often than women intended to renew their licenses. In addition, renewers were more likely to have a higher income, to live together with/as partners (women in particular), and to live in rural areas. There was, however, no significant difference in the level of education between the two groups.

(Insert Table 1 about here)

Renewers and non-renewers differed in all of the considered physical and psychological health-related variables as described in Table 2. The health differences between the two groups were, in most cases, more marked for men than for women, especially with regard to illnesses impairing driving ability. Almost half of the men who

intended to give up driving had illnesses that impaired their driving, while this only applied to a quarter of non-renewing women.

(Insert Table 2 about here)

Travel-related differences

More renewers (96.7%) than non-renewers (45.5%) had a car in the household, $\chi^2(3, 1537) = 507.34$, $p < .001$. While almost half of the renewers (48.7%) drove a car every day, none of the persons who intended to give up driving did so. In fact, 97% of the non-renewers drove less than once a month, most of them never. Thus, most of the non-renewers had already ceased driving before the renewal process. When only looking at those who were still driving, renewers and non-renewers differed significantly in their travelled distances, both today ($p < .001$) and ten years ago ($p < .001$). For men, the difference between renewers and non-renewers was more marked than for women, as can be seen in Figure 1. Outliers (z-scores >=4) and persons who reported not driving (13 men, 52 women today; 16 men, 47 women ten years ago) were not included in the calculation.

(Insert Figure 1 about here)

Renewers felt more safe as transport users than non-renewers (see Figure 2) and men felt more safe than women ($p < .001$ for all transport modes). As can be seen in Figure 2, both the gender difference and the difference between renewers and non-renewers were most distinct for being a car driver.

(Insert Figure 2 about here)

Renewing or not renewing the license

The respondents were asked if they thought renewing a license was difficult. Of those who did not intend to renew the license, 33% expected the renewal to be difficult compared with 3.5% of those who intended to renew *(p < .001)*. The renewers were asked if they were nervous about the evaluation. The great majority (84.7%) reported not being nervous, while more women (19.4%) than men (12.0%) admitted being at least a little nervous *(p < .01)*.

Figure 3 provides the level of agreement with different reasons for renewing the license. The most important reasons were the necessity to drive and the personal importance of having a license. With regard to both reasons, men's level of agreement was significantly higher than women's. In contrast, women agreed more with the statement that the car was not necessary for them, but they wanted to keep the possibility of driving. Feeling like an active person and feeling part of society when being licensed were important for both genders. The only statement participants disagreed with was the use of the license as an ID card .

(Insert Figure 3 about here)

Figure 4 presents, by gender, the agreement with different reasons for *not* renewing the license. The level of agreement was much lower compared to the reasons for renewing the license, which indicated that either some relevant reasons were missed in the questionnaire or that the decision not to renew is to a lesser degree an active decision based on reasoning. The missing desire to continue driving received the highest level of agreement,

both by men and women. For men, health-related reasons were of higher importance and men were more often strongly encouraged by others (doctor, spouse/family) to stop driving. Men reported also more often than women that avoiding the medical evaluation was a reason to cease driving.

(Insert Figure 4 about here)

In order to estimate the importance of different factors on the probability of renewing one's license, a logistic regression analysis was calculated. The analysis was conducted with the intention to renew (yes vs. no) as the dependent variable with predictors that have been found to be significantly related to driving cessation in previous research: gender, education, living together with a partner (yes/no), car use frequency, travelled distances, frequency of driving others, dependency of others for transport, perceived safety as a driver, depression, mastery, subjective health, and illnesses (possibly/not) impairing driving ability. Income could not be included as the variable contained too many missing values. The model was statistically significant, $\chi^2(14, 1437) = 205.33$, $p < .001$, indicating that the predictors reliably distinguished between renewers and not-renewers. Prediction success for the sample was 72.5% (Nagelkerke's R^2). The statistical significance of the individual predictors was evaluated using the Wald test, in which the regression coefficient is divided by its standard error. The results showed that among 14 predictors, there were four variables that reliably predicted the intention to renew the license: car use frequency ($p < .001$), perceived safety as a driver ($p < .01$), illnesses impairing driving ability ($p < .05$) and dependency on others ($p = .05$), ,. The gender variable itself was not significant, but in all significant

predictors, except for illnesses impairing driving ($p < .10$), significant gender differences were found ($p < .01$).

(Insert Table 3 about here)

DISCUSSION

The aim of the present study was to investigate the decision to either stop or continue driving in connection with the first driver's license renewal at the age of 70, and to compare those older drivers who intended to renew and those who intended not to renew their licenses.

First, the vast majority of respondents intended to renew their licenses when turning 70. Only a minority of drivers intended not to renew the license, and of these, the majority was women. People living in urban areas and people living without a partner were also more likely to give up their licenses. *Second*, the intention not to renew was associated with higher prevalence of illnesses; the non-renewers had especially higher prevalence of illnesses impairing driving ability. The health-related differences between renewers and non-renewers were more marked for men than for women. *Third*, transport and driving patterns were strongly associated with the intention to renew or give up. The renewers drove more kilometers both at the time of the interviews and ten years earlier, while most of the non-renewers had already ceased driving. In addition, the non-renewers reported being dependent on others for their transportation more often and felt less safe in traffic, both as drivers and as unprotected road users. *Fourth*, the reasons to renew the license were often grounded in the practical need for the car for everyday transport and one's identity as a car driver, while the reasons to give up the license were most strongly related to the lack of desire to drive. However, for men, health-related reasons were of higher importance as compared with

women. *Fifth*, the renewers did not consider renewing a license to be difficult, while the non-renewers, to a higher degree, did so. The vast majority of the renewers reported not being nervous about the physician's assessment; however, women were more nervous than men. *Finally*, of the various factors, frequency of car use, perceived safety as a driver, independence in personal transport and lack of illnesses impairing driving ability were found to be the strongest factors predicting the intention to renew the driver's license.

Unlike some earlier studies describing driving license renewal and driving cessation in European countries, the present study found only a small minority of older drivers not intending to renew their licenses. Hakamies-Blomqvist & Wahlström (1998) reported that, in 1992, in Finland, about 33% of older female drivers and 12% of older male drivers did not renew their licenses when turning 70. Also, Mitchell (2008), referring to European data from 1998, reported sharp decreases in licensing rates around the ages of 65–70. This suggests that the results of the present study reflect the behavior and preferences of the new, more car-reliant cohorts. This is further supported by the present findings on renewers' relatively high perceived safety in traffic and confidence regarding renewing the license, that is, they reported not being nervous of the evaluation and did not think it would be difficult to renew the license. They also assessed car reliance in everyday transport as an important reason for the renewal.

Yet, many of the factors predicting giving up the license found in the present study are consistent with previous literature. Those renewing their license tend to be in better health, live (more often) outside urban areas and have better economic resources for continuing to drive (cf. Adler & Rottunda, 2006; Chipman et al., 1998; Hakamies-Blomqvist & Wahlström, 1998; Oxley & Charlton, 2009; Sims et al., 2007; Siren et al., 2004; Weeks et al., 2013). In line with previous studies, driving activity and driving history were crucial

factors in predicting license renewal (cf. Hakamies-Blomqvist & Siren, 2003; Rabbitt et al., 1996). The gender differences found were also similar to those found in previous studies (e.g., Hakamies-Blomqvist & Wahlström, 1998; Oxley & Charlton, 2009; Siren et al., 2004; Wilkins et al., 1999). Women were, in general, less likely to renew their licenses, and often did so for reasons not related to fitness to drive. In addition, those men who chose not to renew their licenses had poorer health than female non-renewers and assessed the health-related reasons to be more important in the decision to stop. Men were also more often recommended by others to stop driving, which indicates that women more often gave up driving for less pressing reasons.

In the regression model, the strongest factors to predict the intention to renew the license were active car use, feeling safe as a driver, not being dependent on others and not having illnesses impairing driving ability. While gender per se was not a significant predictor, it was significantly associated with all the predictors except impairment. This further supports the conclusion that women give up driving because of lack of routine and confidence, further leading to decreases in perceived safety.

Reasons to renew/not to renew the license also followed patterns found in earlier studies. Renewing the license was based on practical reasons and need to use the car, while the reasons to give up the license were more ambiguous (cf., Hakamies-Blomqvist & Wahlström, 1998; Oxley & Charlton, 2009). In the present study, the level of agreement in the reasons not to renew was much lower compared to reasons for renewing the license, which indicated that either some relevant reasons were missed in the questionnaire or that the decision not to renew is, to a lesser degree, an active decision based on reasoning. However, a group of drivers, predominately male, pointed towards medical reasons.

The present study had the advantage of a large sample with a high response rate. The reasons for refusals were not recorded, but in general, the sample had a good representativeness. The sample was representative with regard to gender and family status, and only the higher percentage of persons with a higher education restricts the representativeness. As education was not significantly related to the intention to renew the license, this is not expected to affect the generalizability of the results.

The present study relied on self-reports on health, travel behavior and reasons to renew or not renew the driver license. While studies on the reliability of self-reported behavior and health show that self-reports are generally reliable (e.g., Jylhä, 2009; Lajunen & Summala, 2003; McCallum, Shadbolt & Wang, 1994), untrue or biased answers are potential limitations related to the used method. Another limitation of the study was that the group of respondents that did not intend to renew their licenses was smaller than the group that intended to renew their licenses, and especially the number of male non-renewers was small. In some cases, this made it difficult to test the significance of the differences found between renewers and non-renewers. In addition, it should be acknowledged that including multiple analyses on related variables in the same dataset may inflate the risk of type 1 errors. Finally, the study addressed only older drivers aged 69 years at baseline. Thus, the results are not generalizable to all older Danish drivers, but only to the youngest cohorts of seniors. While the present study indicates that the younger seniors to a high degree intend to continue driving, this may be different in the older cohorts as well as later on when these younger cohorts reach older age and have to renew their licenses again.

Regarding generalizability to other motorized nations outside Europe with increasing numbers of ageing drivers, the results are not directly transferable. The automobilization of society has taken place much earlier in the US, Canada and Australia,

and the high car-reliance has been seen already in earlier cohorts of seniors. Nevertheless, while the scale may be different, the *change* related to new cohorts and their lifestyles and consumption behavior found in the present study may be a phenomenon that can be observed elsewhere.

In the new cohorts of seniors, most drivers seem to have a strong intention to continue driving into old age. This has been somewhat anticipated in previous literature (e.g., Coughlin, 2009; Hakamies-Blomqvist, Henriksson, Anund & Sörensen, 2005), and is confirmed in the present study. At the age of 70, only a minority of Danish drivers intended to give up their licenses. Many of those had poorer health and suffered from conditions impairing driving ability, indicating that those ceasing driving showed good self-reflection.

An excessive testing of fitness to drive in connection with license renewal, a policy that is in place in many countries, has been widely criticized in recent literature (Desapriya, Ranatunga & Pike, 2012; Langford & Koppel, 2006; O'Neill, 2012a,b; Siren & Meng, 2012). The criticism is based both on the fact that seniors are in general drivers with an enviable safety record, as well as the fact that in the new cohorts the driver population is numerous and an age-based frequent screening of whole cohorts requires massive resources. The findings of the present study—showing the preferences and intentions of the new cohorts in terms of car driving—also question the meaningfulness and cost effectiveness of age-based screening.

While, the problem of unwarranted mobility loss, as a consequence of premature driving cessation, may be smaller than previously anticipated, the gendered pattern in driving cessation is still obvious. Although the proportion of older women choosing to keep their licenses has increased over time, women are still overrepresented among non-renewers, and their reasons for not renewing their licenses are still ambiguous and, in general, not related to

health problems. For women, driving cessation seemed to be more related to lack of driving routine and confidence, which is in line with previous findings. Thus, the future efforts in preventing premature driving cessation should address these issues and be targeted especially towards older women.

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Table 1: Differences between renewers and non-renewers in socio-demographic variables for the whole sample and divided by gender

	Renewers (%)	Non-renewers (%)	Test results[a]
ALL (*N*=1537)			
Women	45.3	78.2	$\chi^2(1, 1537) = 41.10, p < .001$
Higher education	26.8	28.0	$\chi^2(1, 1531) = 0.07, p = .799$
Low income quartile (≤13,400 EUR/year)	27.8	30.0	
High income quartile (>29,000 EUR/year)	25.8	15.0	$F(1,1292) = 6.24, p =.013$
Living together with a partner	79.4	56.4	$\chi^2(2, 1537) = 29.13, p < .001$
Copenhagen	12.8	27.7	
Other big cities	10.1	10.9	
Rural areas	71.1	61.4	$\chi^2(2, 1537) = 18.33, p < .001$
WOMEN (*N*=729)			
Higher education	28.6	25.6	$\chi^2(1, 725) = 0.30, p = .584$
Low income quartile (≤13,400 EUR/year)	31.8	30.6	
High income quartile (>29,000 EUR/year)	16.5	12.9	$F(1,569) = 1.68, p = . 195$
Living together with a partner	71.8	51.9	$\chi^2(2, 729) = 18.52, p < .001$
MEN (*N*=808)			
Higher education	25.4	36.4	$\chi^2(1, 806) = 1.35, p = .245$
Low income quartile (≤13,400 EUR/year)	25.0	27.8	
High income quartile (>29,000 EUR/year)	32.5	22.2	$F(1,721) = 0.94, p = .334$
Living together with a partner	85.6	72.7	$\chi^2(2, 808) = 4.92, p =.085$

[a] Depending on the scale of measurement, χ^2 tests or ANOVAs were calculated.

Table 2: Differences between renewers and non-renewers in health-related variables for the whole sample and divided by gender

	Renewers	Non-renewers	Test results[a]
ALL (*N*=1537)			
"Good" or "excellent" health (%)	93.8	81.2	$F(1, 1535) = 19.29, p < .001$
Number of illnesses (Mean)	1.7	2.5	$F(1, 1535) = 19.33, p < .001$
Illnesses impairing driving ability (%)	15.9	29.7	$\chi^2(1, 1537) = 12.74, p < .001$
Illnesses possibly impairing driving ability (%)	23.1	31.7	$\chi^2(1, 1537) = 3.90, p = .048$
Illnesses not impairing driving ability (%)	67.8	79.2	$\chi^2(1, 1537) = 5.74, p = .017$
Depression score	13.0	14.7	$F(1, 1535) = 21.34, p < .001$
Mastery score	22.8	22.1	$F(1, 1535) = 3.69, p = .055$
Independent of others for transport (%)	94.3	61.4	$F(1, 1535) = 224.64, p < .001$
WOMEN (*N*=729)			
"Good" or "excellent" health (%)	93.2	83.5	$F(1, 727) = 8.31, p = .004$
Number of illnesses (Mean)	1.7	2.2	$F(1, 727) = 6.53, p = .011$
Illnesses impairing driving ability (%)	17.4	25.3	$\chi^2(1, 729) = 2.97, p = .062$
Illnesses possibly impairing driving ability (%)	18.2	25.3	$\chi^2(1, 729) = 2.36, p = .086$
Illnesses not impairing driving ability (%)	70.8	79.7	$\chi^2(1, 729) = 2.80, p = .059$
Depression score	13.4	14.7	$F(1, 727) = 7.91, p = .005$
Mastery score	22.7	22.2	$F(1, 727) = 1.86, p = .173$
Independent of others for transport (%)	93.7	60.8	$F(1, 727) = 142.85, p < .001$
MEN (*N*=808)			
"Good" or "excellent" health (%)	94.3	72.7	$F(1, 806) = 9.41, p = .002$
Number of illnesses (Mean)	1.7	3.5	$F(1, 806) = 21.15, p < .001$
Illnesses impairing driving ability (%)	14.8	45.5	$\chi^2(1, 808) = 15.32, p = .001$
Illnesses possibly impairing driving ability (%)	27.1	54.5	$\chi^2(1, 808) = 8.02, p = .007$
Illnesses not impairing driving ability (%)	65.3	77.3	$\chi^2(1, 808) = 5.74, p = .174$
Depression score	12.7	14.7	$F(1, 806) = 8.70, p = .003$
Mastery score	22.9	22.0	$F(1, 806) = 1.42, p = .233$
Independent of others for transport (%)	94.8	63.6	$F(1, 806) = 47.90, p < .001$

[a] Depending on the scale of measurement, χ^2 tests or ANOVAs were calculated.

Table 3: Regression predicting intention to renew the driving license

|	B	Wald	*p*
Female gender	-0.78	1.14	.286
Education	0.19	0.70	.791
Living together	0.70	0.97	.324
Car use frequency	1.75	39.56	.000
Distances traveled	-0.63	0.58	.446
Frequency of driving others	-0.01	0.00	.975
Dependency on others for transport	-0.93	3.72	.054
Perceived safety as driver	1.17	7.57	.006
Depression	0.12	1.30	.254
Mastery	-0.07	0.48	.490
Subjective health	-0.33	0.48	.487
Illnesses impairing driving	-1.63	4.01	.045
Illnesses possibly impairing driving	-0.04	0.00	.953
Illnesses not impairing driving	-0.96	1.26	.261
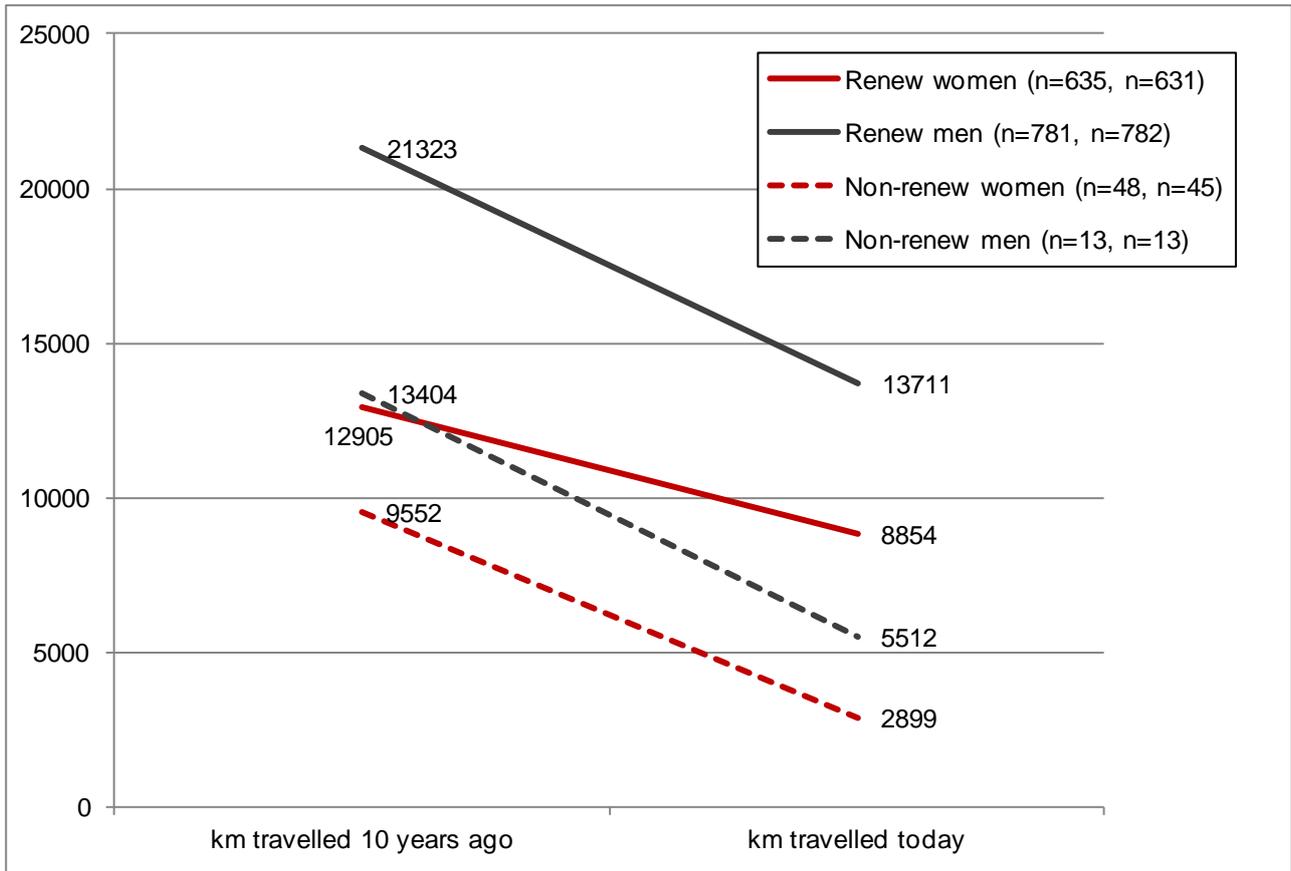
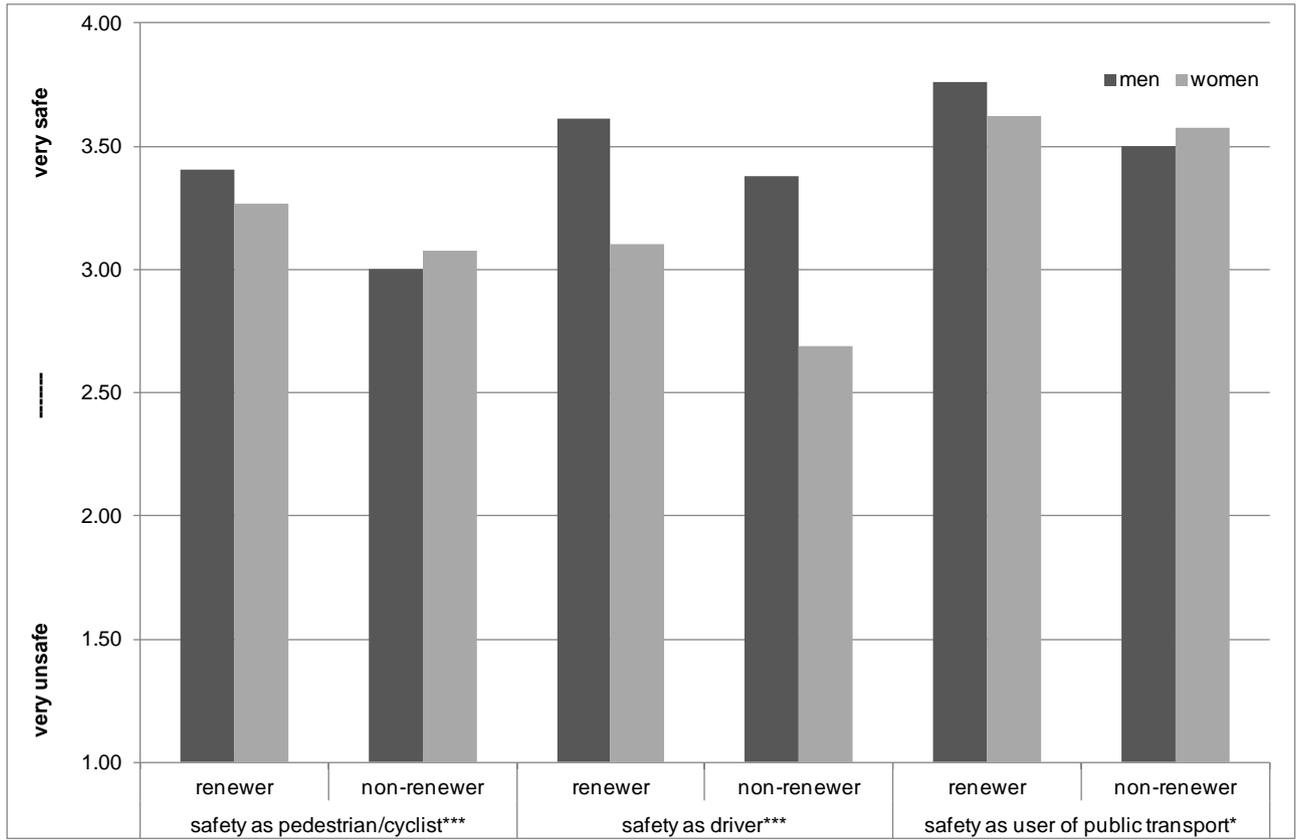Figure 1: Distances traveled by men and women today and 10 years ago

Figure 2: Perceived safety as transport users for renewers and non-renewers by gender
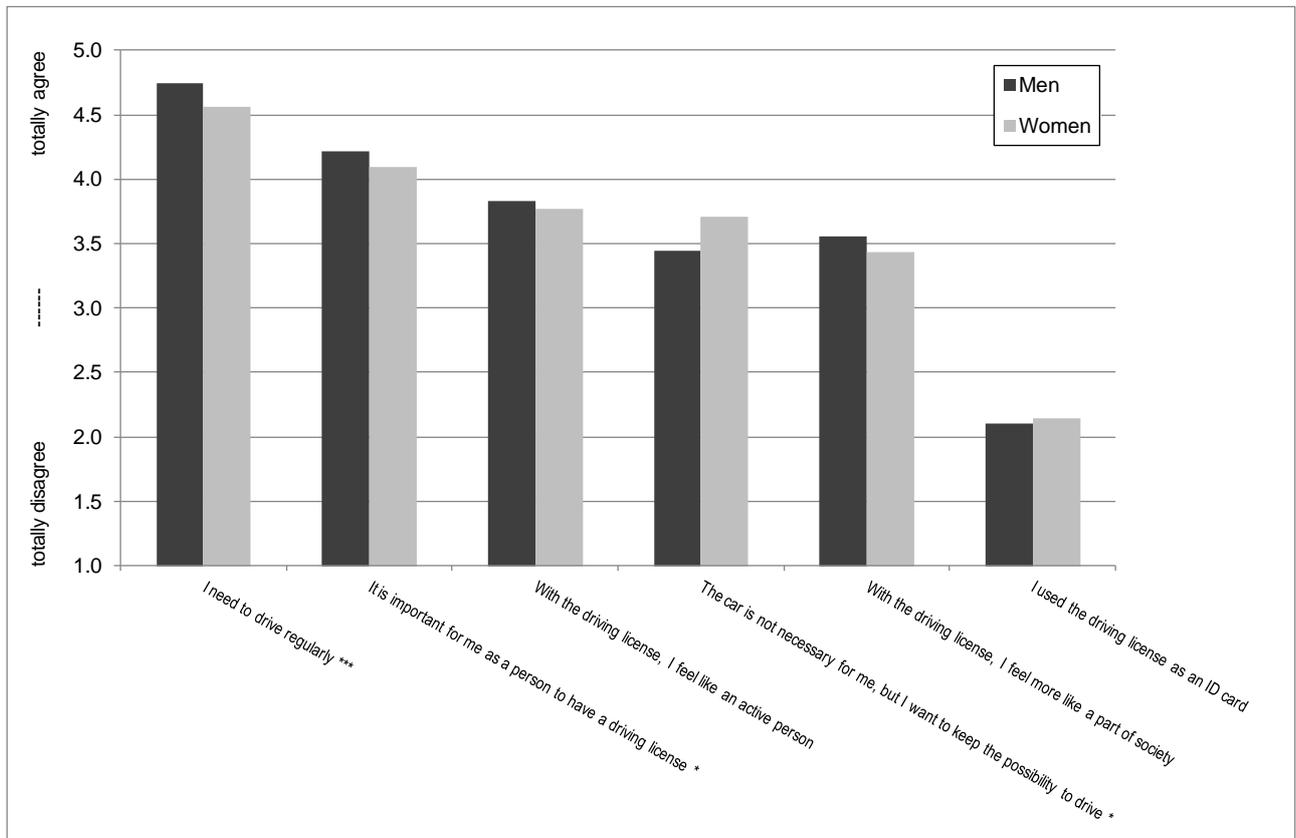*significant differences between renewers and non-renewers, *$p < .05$; *** $p < .001$

Figure 3: Reasons to renew the license by gender
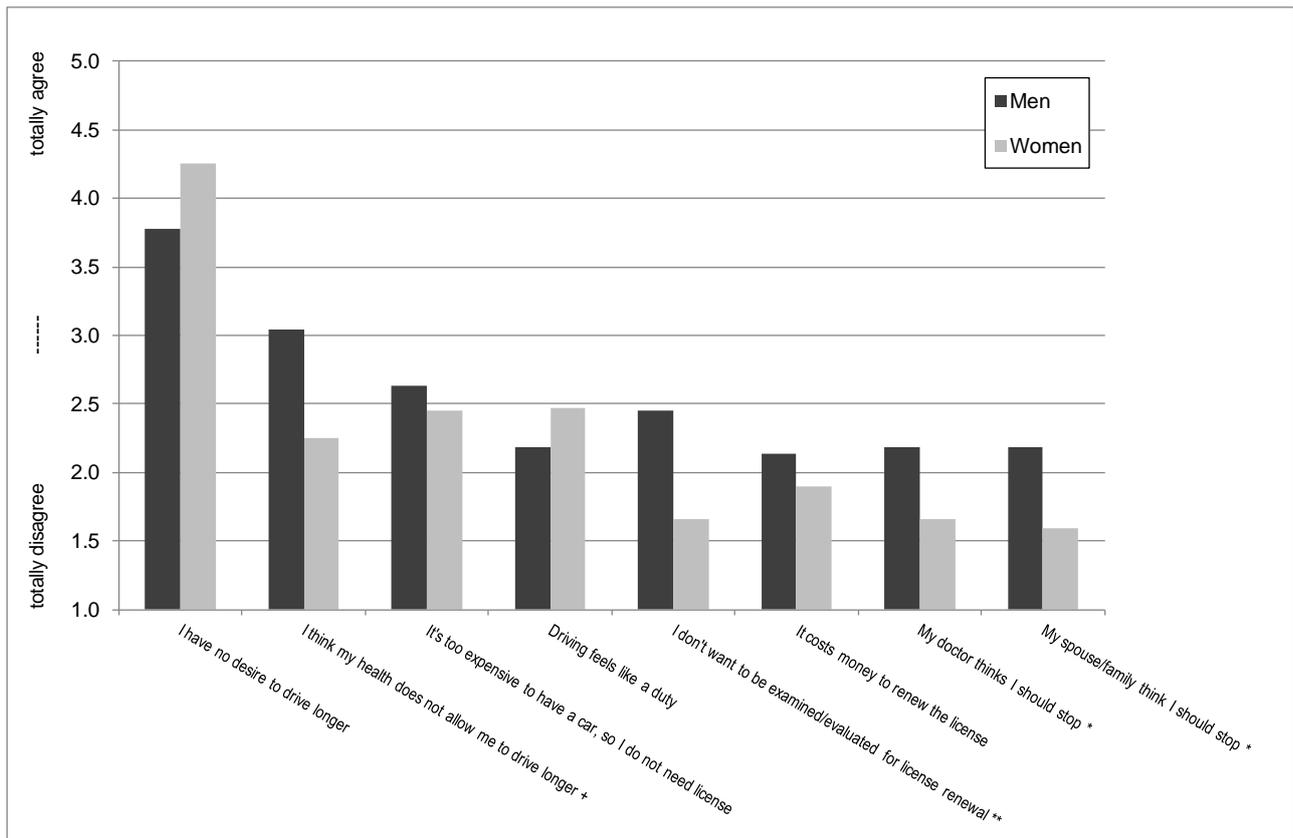
* p < .05; *** p < .001

Figure 4: Reasons not to renew the license by gender

[+]p < .10; * p < .05; ** p < .01